EXECUTIVE SUMMARY
DRAFT ENVIRONMENTAL IMPACT STATEMENT
COLORADO RIVER MANAGEMENT PLAN
GRAND CANYON NATIONAL PARK

The Colorado River in Grand Canyon provides a unique combination of thrilling whitewater adventure and magnificent vistas of a remarkable geologic landscape, including remote and intimate side canyons. The 277-mile long river corridor also is home to unique and abundant natural and cultural resources, including diverse wildlife, threatened and endangered species, hundreds of archeological sites, caves, and natural soundscapes. For these reasons, a river trip through the Grand Canyon is one of the most sought after backcountry experiences in the country, and nearly 22,000 visitors run the river annually.

PURPOSE OF AND NEED FOR THE ACTION

The park's 1995 *General Management Plan* set as an objective the management of "the Colorado River corridor through Grand Canyon National Park to protect and preserve the resource in a wild and primitive condition" (NPS 1995b). The *General Management Plan* also stated, "The park's 1989 *Colorado River Management Plan* will be revised as needed to conform with the direction given in the management objectives of the *General Management Plan.* The use of motorboats will be addressed in the revised plan, along with other river management issues identified through the scoping process" (NPS 1995b).

A revised *Colorado River Management Plan* is needed to address both long-standing and recent issues concerning resource protection, visitor experience, and public services along the river; to consider the impacts of NPS river management on federally recognized American Indian tribes whose reservations adjoin Grand Canyon National Park; and to fulfill the requirements of a 2002 agreement that settled a lawsuit about the river management plan.

The Colorado River corridor in Grand Canyon National Park will be managed to provide a wilderness-type river experience in which visitors can intimately relate to the majesty of the Grand Canyon and its natural and cultural resources. Visitors traveling through the canyon on the Colorado River will have the opportunity for a variety of personal outdoor experiences, ranging from solitary to social, with as little influence from the modern world as possible. The Colorado River corridor will be protected and preserved in a wild and primitive condition.

The Hualapai Indian Reservation and Grand Canyon National Park share a 108-mile-long boundary in the Lower Gorge of the Grand Canyon. The Hualapai Tribe's vision for the Colorado River corridor is protect the resources of the tribe and to provide for the development of economic opportunities for existing and future members of the tribe. The tribe has limited economic resource potential and looks to the Colorado River corridor as a source of growth for tribal economic development and employment.

The United States has a trust responsibility to protect tribal lands and waters. The plan considers and analyzes the social and economic impacts of the various alternatives on the Hualapai Indian Tribe and its trust resources. The tribe has acted as a cooperating agency in the preparation of

this plan. As a cooperating agency, the Hualapai Tribe has established its purpose for the plan as fulfilling the tribe's need to preserve and protect tribal traditions, culture, sovereignty, and resources for future generations and to cooperate on a government-to-government basis with local, state, and federal governments.

SCOPE OF THE PLAN

The *Draft Environmental Impact Statement* evaluates a full range of alternatives for the identified issues as well as comprehensively evaluates impacts to natural and cultural resources from visitor uses on the Colorado River.

The *Colorado River Management Plan* is primarily a visitor use management plan, which specifies actions to preserve park resources and the visitor experience, while enhancing recreational opportunities. Although this plan is intended to cover at least the next 10 years, some of the plan's goals, objectives, and desired conditions may require a longer period to achieve.

Where the Hualapai Reservation and Grand Canyon National Park share boundaries, the *Colorado River Management Plan* describes management zones that reflect the variety and intensity of visitor activities, particularly in the river segments downstream of Diamond Creek. The plan addresses cooperative management issues with neighboring units of the national park system, tribal governments, and other agencies with jurisdiction or interests affected by, or that may themselves affect, management of the Colorado River corridor in the park. In addition, the plan considers the input of other stakeholders, as expressed in the scoping and stakeholder participation process.

Glen Canyon Dam operations, allocation of administrative use, wild and scenic river designation, formal wilderness designation, backcountry operations, and commercial overflights are outside the scope of this document.

MAJOR ISSUES AND AREAS OF CONTROVERSY

Major issues identified during public and internal scoping and tribal consultation include the following:

- Appropriate level of visitor use consistent with natural and cultural resource protection and visitor experience goals
- Allocation of use between commercial and noncommercial groups
- Administrative use
- Noncommercial permit system
- Appropriate levels of motorized and non-motorized boat use
- Levels of helicopter use to transport river passengers to and from the river
- Appropriate levels and types of upriver travel from Lake Mead
- Quality of river trips (including crowding, trip length, group size and scheduling issues)

The range of comments from public and internal scoping and tribal consultation indicated that each of these issues carried some level of controversy. However, comments seemed to be most divided on the issues of motorized versus non-motorized use, allocations between commercial and noncommercial users, and the appropriateness of helicopter exchanges.

ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVES

For the purposes of this plan, the Colorado River has been divided into two geographic sections that recognize the different management zones on the river, with a specific set of alternatives for each section. The NPS preferred alternative combines Lees Ferry Alternative H with Lower Gorge Alternative 4.

- **Lees Ferry Alternatives —** Eight alternatives have been developed for the section of river from Lees Ferry (River Mile [RM] 0) to Diamond Creek (RM 226). The alternatives include a no-action alternative (Alternative A) plus Alternatives B through H. Alternative H is the preferred alternative.
- **Lower Gorge Alternatives —** Five alternatives have been developed for the section of river from Diamond Creek (RM 226) to Lake Mead (RM 277). The alternatives include a no-action alternative (Alternative 1) plus Alternatives 2 through 5. Alternative 4 is the preferred alternative.

CARRYING CAPACITY AND KEY CRITERIA FOR DEVELOPING THE LEES FERRY ALTERNATIVES

The number of launches per day at Lees Ferry varies widely under current conditions, and during the peak season up to nine trips per day can launch. To reduce crowding and bottlenecks from this level of daily launches, a launch-based system would be instituted to distribute launches more evenly. All action alternatives would reduce the maximum number of trips launching per day from nine to between four and six during the summer peak season. To further mitigate crowding, reductions in maximum trip lengths and group sizes, as well as distribution of launches into non-peak seasons, were analyzed. The action alternatives would reduce the maximum group size from 43 (passengers and crew) to 24–40.

The planning process for the *Colorado River Management Plan* analyzes visitor carrying capacity, visitor experience, and potential visitor use impacts on the resource. The primary factors that determine carrying capacity on the Colorado River from Lees Ferry to Lake Mead are:

- number, size, distribution, and expected lifespan of camping beaches
- number, types, and condition of natural and cultural resources
- contacts per day (on-river attraction site encounters), campsite competition, number of trips at one time (TAOT), number of people at one time (PAOT), group size, trip length, and launch patterns

The first two factors describe the physical environment and serve as the foundation for determining appropriate levels of overall use. The third factor describes variables that characterize the visitor experience. The planning team concluded that no single standard could be used to

calculate carrying capacity for recreational use in the river corridor. Rather, it is necessary to consider the interaction of all the factors, including user-days, the number of trips and people in the canyon at one time, along with the amount of user discretionary time, and how they affect resources and visitor experience.

LEES FERRY ALTERNATIVES (RIVER MILES 0 TO 226)

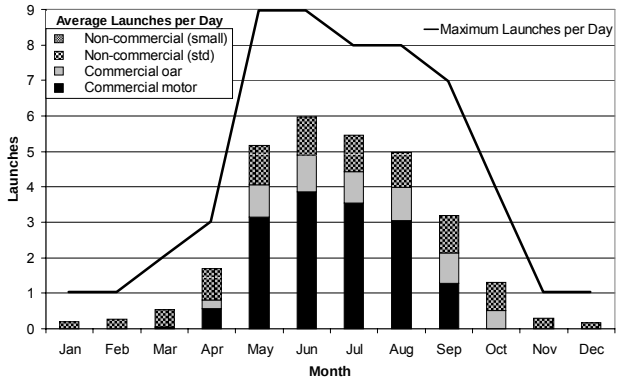
Key features of Alternatives A through H for the section of river from Lees Ferry (RM 0) to Diamond Creek (RM 226) are below.

SUMMARY OF ALTERNATIVES — LEES FERRY TO DIAMOND CREEK

	Alternatives							
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**
Number of Motor / No-Motor Months	9/3	0/12	0/12	8/4	6/6	6/6	8/4	6/6
Months with No Motors	Sept 15–Dec 15	All	All	Mar, Apr, Sept, Oct	Oct–Mar	Jul–Dec	Sept–Dec	Sept–Feb
Maximum Number of Launches per Day								
Summer	9	4	4	5	6	6	6	6
Shoulder	7	2	3	3	3	4	5	3
Winter	1	1	2	1	2	2	2	1
Maximum Group Size (including guides)								
Commercial Motor	43	N/A	N/A	25	30	30	40	32/24
Commercial Oar	39	25	30	25	25	30	30	32/24
Noncommercial Standard	16	16	16	16	16	16	16	16
Noncommercial Small	N/A	8	N/A	8	8	8	8	8
Maximum Trip Length to Diamond Creek (in number of days)								
Summer (May–August)								
Commercial Motor	18	N/A	N/A	10	8	10	8	10
Commercial Oar	18	16	16	16	14	16	14	16
Noncommercial	18	16	16	16	16	16	14	16
Shoulder Seasons (March–April / September–October)								
Commercial Motor	18	N/A	N/A	10	8	10	8	10
Commercial Oar	21	18	18	18	16	18	16	18
Noncommercial	21	18	18	18	18	18	16	18
Winter (November–February)								
Commercial Motor	30	N/A	N/A	18	N/A	18	N/A	N/A
Commercial Oar	30	N/A	21	21	N/A	21	N/A	21
Noncommercial Motor	30	N/A	N/A	18	N/A	18	18	N/A
Noncommercial Oar	30	18	21	30	21	21	21	25
Whitmore Exchanges								
Helicopter Exchanges (months allowed)	All	None	None	None	Apr–Sept	Jan–Jun	Jan–Aug	May–Aug
Hiking Exchanges (months allowed)	All	None	All	All	All	All	All	Mar., Apr., Sept., Oct.
Probable Total User-Days								
Commercial	113,083	97,694	166,814	137,368	115,500	128,689	115,500	115,500
Noncommercial	58,048	74,523	115,783	85,946	121,683	106,457	134,410	102,725
Total	**171,131**	**172,218**	**282,598**	**223,314**	**237,183**	**235,146**	**249,910**	**218,225**
Probable Total Yearly Passengers								
Commercial	18,891	7,914	17,686	14,979	16,120	18,671	19,688	19,835
Noncommercial	3,571	4,980	7,543	5,449	7,693	6,745	8,992	6,482
Total	**22,461**	**12,894**	**25,228**	**20,427**	**23,812**	**25,415**	**28,680**	**26,317**
Opportunity for Winter Commercial Trips?	Motor or oar	No	Oar	Motor or oar	No	Motor or oar	No	Oar

Lees Ferry Alternatives

A



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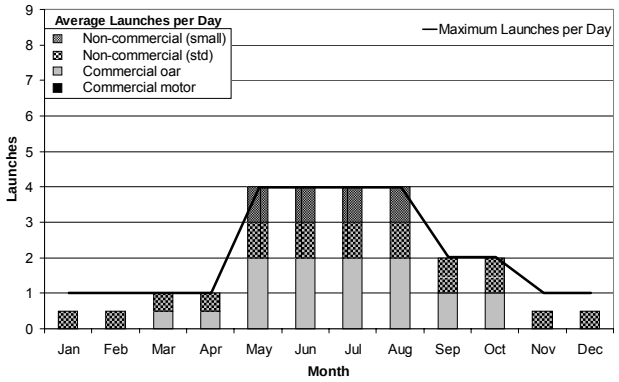

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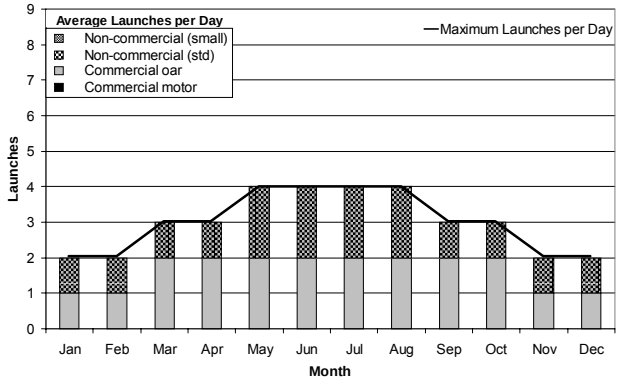

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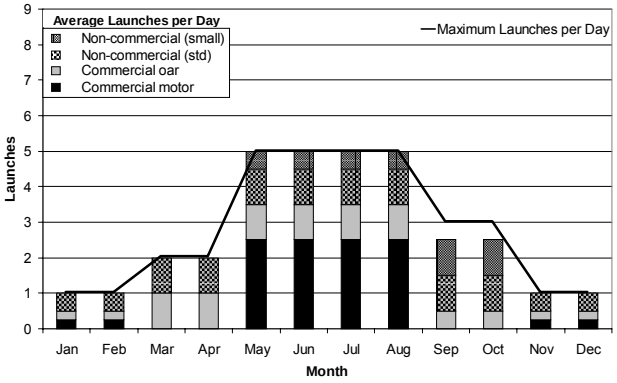

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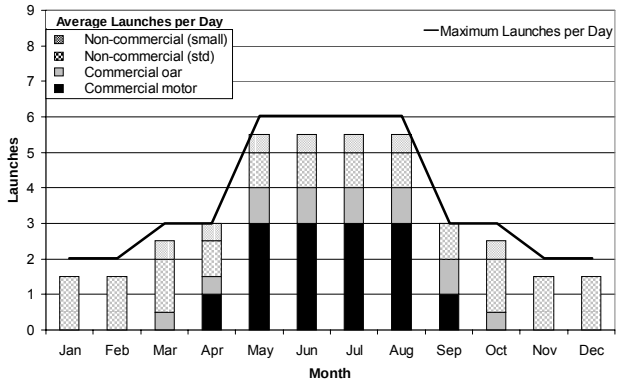

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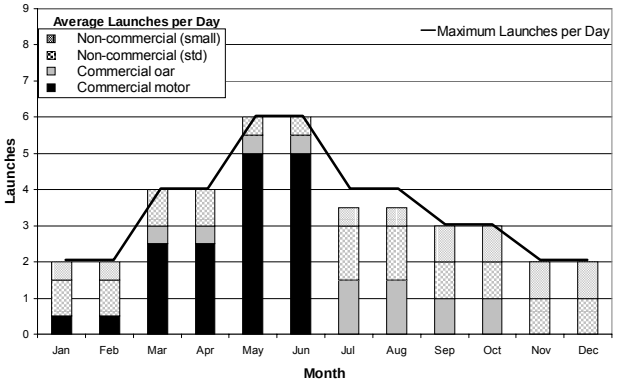

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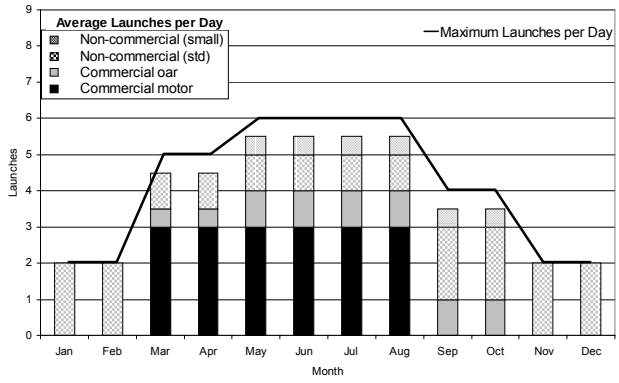

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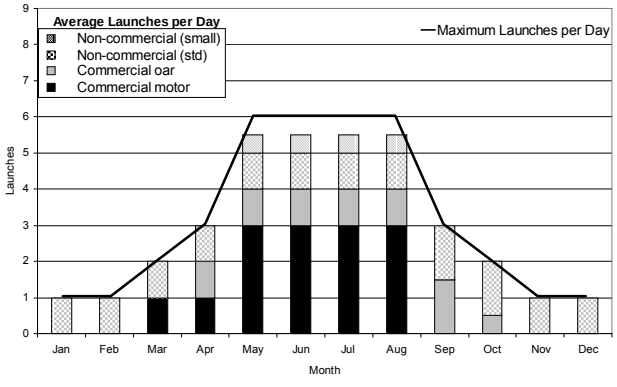

Alternative A: No Action (Current Management)

Alternative A is the no-action alternative for the Colorado River section between Lees Ferry and Diamond Creek. The number of launches per day at Lees Ferry varies widely under current conditions, and up to nine trips per day can launch during spikes in the peak season. This alternative allows for nine months of mixed use (both motorized and non-motorized trip types) and three months of non-motorized use. There are no limits on helicopter exchanges at Whitmore. The total number of commercial and noncommercial passengers averages 22,461.

Alternative B

Alternative B is a no-motor alternative characterized by the lowest group sizes, the least number of maximum daily launches, and substantially lower numbers of probable yearly passengers (12,894). There would be a limited increase in winter recreational use. No helicopter exchanges would be allowed at Whitmore.

Alternative C

Alternative C is a no-motor alternative characterized by smaller group sizes and fewer maximum daily launches (except in winter), and an increase in the number of probable yearly passengers (25,228). A substantial increase in shoulder and winter season use would be allowed. There would be no helicopter exchanges at Whitmore.

Alternative D

Alternative D is a mixed-motor/no-motor alternative. Shoulder months (March-April and September-October) would be set aside for non-motorized use, with the remaining months would be for mixed use. This alternative is characterized by the lowest allowable group sizes, fewer maximum daily launches, and reduced probable yearly passenger totals (20,427). There would be no helicopter exchanges at Whitmore.

Alternative E

Alternative E is a mixed motor/no-motor alternative. A six-month mixed use season would be allowed from April to September, with the remaining six months for non-motorized use. This alternative is characterized by smaller group sizes and fewer launches per day (except in the winter season), and an increase in probable yearly passenger totals (23,812). Helicopter exchanges at Whitmore would be allowed from April through September.

Alternative F

Alternative F is a mixed motor/no-motor alternative that would split the year in half, with mixed use allowed from January through June, and non-motorized use from July through December. It is characterized by smaller group sizes and fewer launches per day (except in the winter season),

and an increase in probable yearly passenger totals (25,415). Helicopter exchanges at Whitmore would be allowed from January through June.

Alternative G

Alternative G is a mixed motor/no-motor alternative, with eight months mixed use and four months (September through December) non-motorized use. It is characterized by slightly smaller maximum group sizes, the highest level of allowable daily launches of all of the action alternatives, and the highest number of probable yearly passengers (28,680). Helicopter exchanges at Whitmore would be allowed from January through August.

Alternative H (NPS Preferred Alternative)

Alternative H is a mixed motor/no-motor alternative that would divide the year into two six-month periods, with mixed use occurring from March through October and non-motorized use from September through February. It is characterized by smaller group sizes and fewer daily launches except during the winter months, where launches would be the same as current conditions. This alternative would allow for a substantial increase in probable yearly passenger totals (26,317). Helicopter exchanges at Whitmore would be allowed from May through August.

LOWER GORGE ALTERNATIVES (RIVER MILES 226 TO 277)

Recreational use patterns change in this section of the river as a result of differing land management practices and road and boat access to the river by way of Hualapai tribal lands and Lake Mead. Management zones in this section of the river allow for increased densities and types of use. Key features of the Lower Gorge alternatives are summarized below:

SUMMARY OF ALTERNATIVES — LOWER GORGE

	Alternatives				
	1	2	3	4	5
Diamond Creek Launches (maximum group size, including guides)					
Noncommercial	Maximum of two launches per day (16 people each)	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.	Same as alternative 1.
Hualapai River Runner (HRR) Day Trips	Average of one launch per day (up to 100 people)	Peak season: two launches per day (30 people). Non-peak season: one launch per day (30 people)	Peak season: three launches per day (30 people). Non-peak season: two launches per day (30 people)	Peak season: variable (40 people), not to exceed 96 passengers/day. Non-peak season: two launches per day (35 people)	Same as alternative 4.
HRR Overnight Trips	Average of one trip per week (34 people)	One trip per day (30 people)	Two trips per day (30 people)	Peak season: three trips per day (20 people). Non-peak season: one trip per day (20 people)	Same as alternative 4.

	Alternatives				
	1	2	3	4	5
Campsites					
Available Campsites	15	15+1	15+2	15+3	15+3
Modification of New Campsites*	N/A	Low	Medium	Low	Low
Quartermaster Area Dock					
Type of Dock	Two small floating docks (deteriorated)	None.	One small floating dock at RM 263.**	Same as alternative 3.**	One large floating dock at RM 263.**
Pontoon Operations					
Maximum Daily Passengers†	Peak season: 188 Non-peak season: 160	0	400	150	960
Upriver Travel from Lake Mead					
Allowable Destination	Unlimited below Separation Canyon.	Below RM 262.	Below Separation Canyon.	Below RM 260, unless Lake Mead at full pool, then tow-outs below Separation Canyon.	Below RM 273.
Allowable Use	Unrestricted commercial pick-ups, tow-outs, and non-commercial jetboats	Commercial pick-ups: peak season — two per day; non-peak season — none. Tow-outs allowed below RM 262.	Four commercial pick-ups per day, year-round.‡ Two jetboat tours per day in the peak season. Tow-outs allowed below Separation Canyon.	Commercial pick-ups: peak season — four per day; non-peak season — one per day. Tow-outs below RM 260.	Jetboat pickups and tow-outs below RM 273.

* Low — vegetation removal only; medium — vegetation removal and limited supply storage.

** Assumes removal of existing docks, and installation of a single dock at RM 262.5, contingent on full environmental compliance.

† Passenger access and egress occurs via helicopter.

‡ Commercial pickups would be allowed to shuttle kayak trips up to RM 273.

Alternative 1: No Action (Current Management)

Alternative1 is the No-Action Alternative. Current management is largely unregulated and is characterized by takeouts from upriver trips, Hualapai River Runner (HRR) day trips, occasional HRR overnight trips, upriver continuation trips, noncommercial trips launching at Diamond Creek, and pontoon boat excursions floating in the Quartermaster area (RM 262). Passengers for the pontoon boat excursions and the HRR trips enter and exit the river corridor be means of helicopters in the Quartermaster area. Helicopter operations in the Quartermaster area take-off and land on sovereign tribal land, so the National Park Service does not regulate helicopter operations in the Quartermaster area.

Alternative 2

Alternative 2 is characterized by implementation of daily passenger limits launching from Diamond Creek and by the elimination of pontoon boat operations and associated facilities in the Quartermaster area. This alternative would provide for smaller group sizes, trip length limits, and

a small decrease in the number of people launching per day. Upriver trip takeouts would be allowed based on continuation trip needs.

Alternative 3

Alternative 3 is characterized by daily passenger limits for HRR and pontoon boat operations. Peak daily use for HRR day trips would be reduced, while HRR overnight trips would go from an average of three trips per month to two trips per day year-round. The number of pontoon boat passengers would be capped at 400 per day. Takeouts for upriver trips would be allowed based on takeout needs for continuation trips. An additional commercial use, jetboat tours, would be allowed, with a maximum of two tours per day. A floating, formal dock would be provided at RM 262, contingent on environmental compliance and the removal of the informal docks at RM 262 and 263.

Alternative 4 (NPS Preferred Alternative)

Alternative 4 is characterized by use limits and a redistribution of HRR operations. This alternative represents a consensus between Grand Canyon National Park and the Hualapai Tribe on levels of HRR use and other uses originating at Diamond Creek. However, Alternative 4 represents the National Park Service's preference for lower levels of pontoon boat use compared to current average use. Peak daily use for HRR trips would be comparable to current conditions, while HRR overnight trips would go from an average of three per month to up to three per day. The number of pontoon boat passengers would be capped at 150 per day. A floating, formal dock would be provided at RM 262, contingent on environmental compliance and the removal of the informal docks at RM 262 and 263.

Alternative 5 (Hualapai Tribe Proposed Action)

Alternative 5 is characterized by use limits and a redistribution of HRR operations. This alternative represents a consensus between Grand Canyon National Park and the Hualapai Tribe on levels of HRR use and other uses originating at Diamond Creek. This alternative, however, represents the Hualapai Tribe's proposed higher levels of pontoon boat use in the Quartermaster area compared to current average use. Peak daily use for HRR trips would be comparable to current conditions, while HRR overnight trips would go from an average of three per month to up to three per day. The number of pontoon boat passengers would be capped at 960 per day. A floating, formal dock would be provided at RM 262, contingent on environmental compliance and the removal of the informal docks at RM 262 and 263. Upriver jet boat use would be restricted to below RM 273.

MONITORING AND IMPLEMENTATION PLAN

Subject to the availability of necessary funding, the National Park Service will develop a monitoring and implementation plan once a revised *Colorado River Management Plan* has been approved. As part of this, the limits of acceptable change indicators and standards from the 1989

river management plan will be revised as appropriate. Also, if resource conditions change sufficiently to adversely affect recreational experiences (e.g., disappearing beaches), or if mitigation measures cannot be adequately implemented or are unsuccessful, the park may use an adaptive management approach to review and revise visitor use prescriptions in this river management plan.

OTHER ELEMENTS CONSIDERED IN THE PLAN

The following elements are common to all of the alternatives.

Allocation System. Three approaches to distributing trips in Grand Canyon were evaluated: (1) a "split" allocation system where commercial and noncommercial users compete for permits in separate pools with different distribution mechanisms, (2) a "common pool" system where all users compete for permits in the same pool and in the same way, and (3) an "adjustable split" allocation system that combines features of both.

Objectives for selecting an approach to allocation of use include (1) address noncommercial user perception of allocation inequity, (2) maintain or improve quality of commercial services offered to river users, and (3) seek to keep costs to river users as low as possible while adequately funding river operations.

The National Park Service's preferred option is the Adjustable Split Allocation, which offers the advantage of being able to adapt and respond to important factors such as demand while maintaining a degree of planning stability for commercial companies. An "all-user registration" process could be implemented to enable the Park Service to obtain up-to-date demand information from users.

Initiatives Related to Culturally Affiliated Indian Tribes. Pending public review and comment, the National Park Service is considering implementing one or more of the following initiatives related to culturally affiliated American Indian tribes and enhanced interpretation of the Grand Canyon from a Native American perspective:

1. The National Park Service will offer a new full-river concession contract, carved out of the current commercial allocation, to be awarded competitively under existing authorities, including, if appropriate, 36 CFR 51.17(b)(2). The new contract will comprise approximately 2,500 user-days (six launches) during the spring and summer months. The new concession contract will include, among other things, a requirement to provide interpretation of the Grand Canyon from the perspective of American Indian tribes or groups that have historical ties to the canyon and are culturally affiliated with it.
2. The National Park Service will recommend to the Department of the Interior that it support the Hualapai Tribe's efforts to obtain special legislation authorizing a noncompetitive, full-river concession contract for the tribe or a tribally owned enterprise, if the tribe's legislative proposal is consistent with the management objectives of the Lees Ferry and Lower Gorge alternatives selected as the final management plan and the record of decision for this environmental impact statement.

3. At the request of a federally recognized American Indian tribe that has historical ties to the canyon and is culturally affiliated with it, the National Park Service will assist the tribe in gaining the expertise and skills necessary to compete for procurement contracts to provide services and logistical support for administrative trips, including research trips.

KEY CHANGES TO OPERATING REQUIREMENTS

- Recreational passengers, whether commercial or noncommercial, will not be allowed to run the Lees Ferry to Diamond Creek section of the river more than once a year.
- Commercial passengers must be accompanied by a qualified guide on all trip-related hiking, including hiking exchanges both into and out of the canyon.
- Use of the mouth of Tapeats and Kanab Creeks will be limited to day use only.
- Swimming and wading in the Little Colorado River will be restricted to the lower 300 feet of the confluence from March 1 to August 31. Boat parking will be restricted to upstream or downstream of the confluence year-round.
- Commercial guides may not be hired to assist on noncommercial trips.
- The minimum trip length from Lees Ferry to Phantom Ranch will be three nights and part of four days.
- Generator use will be limited to emergency situations and pumping rafts.

Noncommercial Permit System. The noncommercial permit system will be modified in any chosen alternative to reflect changes that include descriptions for trip leaders, waitlist for groups, and pure lottery for groups. The National Park Service's preferred option for the noncommercial permit system is a weighted lottery for groups. Under this option each launch opportunity would be awarded to a member of the pool of people who had registered their interest in a particular launch date by the drawing deadline. Each applicant would be given one additional chance for each year they had continuously competed in the lottery but had not been successful.

ENVIRONMENTAL CONSEQUENCES

The environmental consequences for the alternatives are summarized for natural and cultural resources, visitor experience, socioeconomic resources, park operations, and adjacent lands. This summary includes an impact rating, potential for mitigation, and how well the alternative meets the management objectives outlined in this plan.

LEES FERRY ALTERNATIVES

Alternative A (Current Conditions)

- For all **natural resources**, impacts would be adverse, localized, short to long term, seasonal to year-round, and minor to major. Except for air quality, terrestrial wildlife, and threatened / endangered / sensitive species, current conditions do not meet management

objectives for natural resources due to spikes in use, large group sizes, and lack funds for active site management.

- For all **cultural resources,** impacts would be adverse, localized, short to long term, seasonal to year-round, and minor to major. Management objectives would not be met due to spikes in visitation, large group sizes, and lack of active site management.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and minor to moderate. Management objectives would be met (with reasonable mitigation) except for reducing impacts from crowding during the summer months.
- For **socioeconomic resources**, impacts would be both direct and indirect and negligible. Management objectives would be met.
- For **park management and operations**, impacts would be adverse, localized and regional, short term, and negligible, as well as long term and moderate. Management objectives would not be met due to inadequate fiscal and human resources.
- For **adjacent lands,** impacts would be adverse, localized, seasonal, short term, and moderate. Management objectives would be met except for the effects from spikes in use and group size and put-in and takeout locations.

Alternative B

- For all **natural resources**, impacts would be adverse, localized, short to long term, seasonal to year round, and negligible to major. Management objectives would be met or exceeded (with reasonable mitigations) with the elimination of spikes in use and reduction in group sizes and trip lengths.
- For all **cultural resources,** impacts would be adverse, localized, long term, year-round, and negligible to moderate. Management objectives would be met (with reasonable mitigation) with the elimination of spikes in visitation and reduction in group sizes.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, negligible to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and moderate to major. Management objectives would be met except that the elimination of motorized use would reduce the diversity of trip types.
- For **socioeconomic resources,** impacts would be direct, adverse, long term, and moderate to major for commercial river runners and the Bar 10 Ranch. Adverse, long-term, and minor impacts are projected for Hualapai tribal enterprises, with adverse, negligible effects to the regional economy. Management objectives would be met (with reasonable mitigation to commercial operations) except for the Bar 10 Ranch facility.
- For **park management and operations**, impacts would be adverse, localized and regional, short term and minor, as well as long term and moderate. Management objectives would be met (with reasonable mitigation) through reductions in levels of use.

- For **adjacent lands,** impacts would be beneficial, localized, short to long term, year-round, and minor to moderate. Management objectives would be met through elimination of spikes in use and reductions in group size.

Alternative C

- For all **natural resources**, impacts would be in the same range as Alternative A. Management objectives would not be met for soils, vegetation, terrestrial wildlife, aquatic resources, and threatened / endangered / sensitive species. Other natural resource management objectives would be met with reasonable mitigation.
- For all **cultural resources,** impacts would be adverse, localized, long term, year-round, and moderate to major. Management objectives would not be met due to increases in use, especially during off-season months. Management objectives would be met (with reasonable mitigation) regarding preserving traditional access for American Indians.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and minor to moderate. Management objectives would be met (with reasonable mitigation) except that the elimination of motorized use would reduce the diversity of trip types.
- For **socioeconomic resources**, impacts would be direct, beneficial, long term, and major for commercial river runners; adverse, long term, and major for Bar 10 Ranch; and negligible for Hualapai tribal enterprises and the regional economy. Management objectives would be met as described for Alternative B.
- For **park management and operations**, impacts would be adverse, localized and regional, short term and major, as well as long term and moderate. Management objectives would be met (with reasonable mitigation) through reductions in group size and spreading use throughout the year.
- For **adjacent lands,** impacts and management objectives evaluations would be the same as Alternative B.

Alternative D

- For all **natural resources**, impacts would be in the same range as Alternative A. Management objectives would be met as described in Alternative B.
- For all **cultural resources,** impacts and management objectives evaluations would be the same as described in Alternative C.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and minor to major. Management objectives would be met (with reasonable mitigations) except for the elimination of Whitmore helicopter exchange opportunities, which would reduce the diversity of trip types.

- For **socioeconomic resources**, impacts would be direct, beneficial, long term, and major for commercial river runners; adverse, long term, major for Bar 10 Ranch; adverse, long term, and minor for Hualapai tribal enterprises; and adverse, negligible for the regional economy. Except for impacts to the Bar 10 Ranch operation, management objectives would be met.
- For **park management and operations**, impacts would be adverse, localized and regional, short to long term, and minor to moderate. Management objectives would be met as described in Alternative B.
- For **adjacent lands,** impacts would be adverse and minor to beneficial and moderate, long term, localized, and direct. Management objectives evaluations would be the same as described for Alternative B.

Alternative E

- For all **natural resources**, impacts would be in the same range as Alternative A. Management objectives would be met as described for Alternative D.
- For all **cultural resources,** impacts would be adverse, localized, long term, year-round, and minor to moderate. Management objectives would be met as described for Alternative B.
- For **visitor use and experience**, impacts would be the same as Alternative A. Management objectives would be met (with reasonable mitigation).
- For **socioeconomic resources**, impacts would be direct, beneficial, long term, and minor for commercial river runners; adverse, long term, and major for Bar 10 ranch; and negligible for Hualapai tribal enterprises and the regional economy. Management objectives would be met as described for Alternative D.
- For **park management and operations**, impacts and management objective evaluations would be the same as described for Alternative D.
- For **adjacent lands,** impacts would be direct, localized, short to long term, year-round, and minor adverse to minor beneficial,. Management objectives would be met as described for Alternative B.

Alternative F

- For all **natural resources**, impacts would be in the same range as Alternative A. Management objectives would not be met for soils, natural soundscape, vegetation, terrestrial wildlife, aquatic resources, or threatened / endangered / sensitive species. Management objectives for other natural resources (with reasonable mitigation) would be met.
- For all **cultural resources,** impacts would be adverse, localized, long term, year-round, and minor to major. Management objectives would be met as described for Alternative B.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to major for some users, while impacts for other users would be

beneficial, localized to regional, short to long term, and minor. Management objectives would be met (with reasonable mitigation), although to a lesser degree than other action alternatives in May and June.

- For **socioeconomic resources**, impacts would be direct, beneficial, long term, and moderate for commercial river runners; impacts would be negligible for Bar 10 Ranch, Hualapai tribal enterprise, and the regional economy. Management objects would be met, as described for Alternative D.
- For **park management and operations**, impacts would be adverse, localized and regional, and short term and major to long term and moderate. Management objectives would not be met due to the substantial shift in use patterns and increased use in the spring months.
- For **adjacent lands,** impacts would be adverse, localized, short term, seasonal, and minor to moderate. Management objectives would be met by eliminating spikes in use and reducing group size.

Alternative G

- For all **natural resources**, impacts would be in the same range as Alternative A. Management objectives would not be met as described for Alternative F.
- For all **cultural resources,** impacts and management objectives evaluations would be the same as described for Alternative F.
- For **visitor use and experience**, impacts and management objectives evaluations would be the same as described for Alternative F. Management objectives would be met (with reasonable mitigation), although to a lesser degree than other action alternatives.
- For **socioeconomic resources**, impacts would be direct, beneficial, long term, and minor for commercial river runners, Bar 10 Ranch , Hualapai tribal enterprises, and the regional economy. Management objectives would be met.
- For **park management and operations**, impacts would be adverse, localized and regional, and short term and major, as well as long term and major. Management objectives would not be met due to large group sizes and increased year-round use.
- For **adjacent lands,** impacts and management objectives evaluations would be the same as described for Alternative F.

Alternative H (NPS Preferred)

- For all **natural resources**, impacts would be in the same range as Alternative A. Management objectives would be met or exceeded as described for Alternative D
- For all **cultural resources,** impacts and management objectives would be the same as described for Alternative E.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to moderate for some users, while impacts for other users would

be beneficial, localized to regional, short to long term, and minor to moderate. Management objectives would be met (with reasonable mitigation).

- For **socioeconomic resources**, impacts would be direct, beneficial, long term, and minor for commercial river runners; beneficial, long term, and major for Bar 10 Ranch; negligible for Hualapai tribal enterprises and the regional economy. Management objectives would be met as described for Alternative F.
- For **park management and operations**, impacts would be adverse, localized and regional, short to long term, and moderate. Management objectives would be met (with reasonable mitigation).
- For **adjacent lands,** impacts would be adverse, localized, long-term, year-round, and minor to moderate. Management objectives would be met as described for Alternative F.

LOWER GORGE ALTERNATIVES

Alternative 1

- For all **natural resources,** impacts would be adverse, localized to regional, short to long term, year-round, and negligible to major. Except for air quality, management objectives would not be met due to unregulated use, unlimited trip lengths, and large group sizes.
- For all **cultural resources,** impacts would be adverse, localized, long term, year-round, and minor to major. Management objectives would not be met due to unregulated use and unlimited trip lengths.
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and negligible to moderate. Management objectives would not be met except in providing a diverse range of opportunities.
- For **socioeconomic resources**, impacts would be negligible, localized, and long term. Management objectives would be met.
- For **park management and operations**, impacts would be adverse, localized and regional, and short term and negligible as well as long term and major. Management objectives would not be met due to inadequate fiscal and human resources.
- For **adjacent lands,** impacts would be negligible. Management objectives would be met.

Alternative 2

- For all **natural resources,** impacts would be adverse, localized to regional, short to long term, year-round, and minor to major. Except for natural soundscape in the Quartermaster area, management objectives would be met.
- For all **cultural resources,** impacts would be adverse, localized, long term, year-round, and negligible to moderate. Management objectives would be met (with reasonable mitigation) due to implementation of regulated use and reduction in trip length.

- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to moderate for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and negligible to major. Management objectives would be met.
- For **socioeconomic resources**, impacts would be beneficial, localized, long term, and major on Hualapai tribal enterprises. Management objectives would be met despite the elimination of pontoon boat use.
- For **park management and operations**, impacts would be adverse, regional, short term, and major on park operations; beneficial, localized and regional, long term, and moderate relative to visitor safety and resource management. Management objectives would be met (with reasonable mitigation) by reducing use levels and eliminating pontoon boat use.
- For **adjacent lands,** impacts and management objectives would be the same as described for Alternative 1.

Alternative 3

- For all **natural resources,** impacts would be adverse, localized to regional, short to long term, year-round, and minor to major. Management objectives would be met (with reasonable mitigation) except for terrestrial wildlife, threatened / endangered / sensitive species, and natural soundscapes in the Quartermaster area due to increased overnight and pontoon boat use.
- For all **cultural resources,** impacts and management objectives would be the same as described for Alternative 2
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and negligible to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and minor to moderate. Management objectives would be met except for wilderness river objectives because of helicopter tours associated with pontoon boat use.
- For **socioeconomic resources**, impacts would be the same as Alternative 2. Management objectives would be met.
- For **park management and operations**, impacts would be adverse, localized and regional, short to long term, and major. Management objectives would not be met due to the pontoon boat use and increased daily launches.
- For **adjacent lands,** impacts and management objectives would be the same as Alternative 1.

Alternative 4 (NPS Preferred Alternative)

- For all **natural resources,** impacts would be in the same range as Alternative 2. Management objectives would be met (with reasonable mitigation) except for terrestrial wildlife, and threatened / endangered / sensitive species, and natural soundscapes in the Quartermaster area due to increased overnight and pontoon boat use.

- For all **cultural resources,** impacts and management objectives evaluations would be the same as Alternative 2
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and minor to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and minor to major. Management objectives would be met except for wilderness river objectives because of helicopter tours and pontoon boat use.
- For **socioeconomic resources**, impacts would be the same as Alternative 2. Management objectives would be exceeded due to increased revenues.
- For **park management and operations**, impacts would be adverse, localized and regional, and short term and major as well as to long term and moderate on park operations. Impacts would be beneficial, localized, long term, and moderate relative to visitor safety and resource management. Management objectives would be met (with reasonable mitigation) by reducing pontoon boat use in addition to increasing daily launches.
- For **adjacent lands,** impacts and management objectives would be the same as Alternative 1.

Alternative 5 (Hualapai Proposed Action)

- For all **natural resources,** impacts would be in the same range as Alternative 2. Management objectives would not be met except for water and air quality, and caves and paleontological resources (with reasonable mitigations)
- For all **cultural resources,** impacts and management objectives evaluations would be the same as Alternative 2
- For **visitor use and experience**, impacts would be adverse, localized to regional, short to long term, and minor to major for some users, while impacts for other users would be beneficial, localized to regional, short to long term, and minor to major. Management objectives would not be met except in providing a diverse range of opportunities.
- For **socioeconomic resources**, impacts would be the same as Alternative 2. Management objectives would be met.
- For **park management and operations,** impacts would be the same as Alternative 4. Management objectives would not be met due to high pontoon boat use levels in addition to increased daily launches.
- For **adjacent lands,** impacts and management objectives would be the same as Alternative 1.